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STUDIES ON STOMATOPOD CRUSTACEA OF THE
INDIAN RIVER REGION OF FLORIDA. I.
REDISCOVERY AND EXTENSION OF RANGE OF
HETEROSQUILLA ARMATA (SMITH, 1881)¹

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Heterosquilla armata (Smith) is an uncommon species of mantis shrimp in the family Lysiosquillidae which was originally described in 1881 from material obtained primarily by the U.S. Fish Commission Steamer "FISH HAWK" off the coast of New England (see Manning, 1969: 52). In spite of numerous collections by many agencies in the waters off the north-eastern United States and elsewhere along the eastern seaboard, apparently only one additional specimen has been taken. This specimen, a female, was captured in 1963 by the National Marine Fisheries Service from 128 m on the margin of the continental slope east of New Jersey. The range of the species thus seemed to be confined to waters off the New England area and vicinity in depths from 96-218 m (Manning, 1974: 4).

It was of considerable interest, then, to find a single female specimen of *H. armata* in collections which we had made on the continental shelf off the central eastern Florida coast. This rediscovery was deemed of sufficient interest to warrant a short report at this time.

We thank Dr. Raymond B. Manning and Thomas E. Bowman, National Museum of Natural History, for critically reading the manuscript. Dr. Manning also confirmed our identification of the species, and provided the data on the one other recently collected specimen. Dr. Roland Wigley, National Marine Fisheries Service Laboratory (NMFS), Woods Hole, Massa-

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chusetts, graciously allowed one of us (LJB) to examine and measure this specimen, and provided additional information on its collection. Photographs of the Floridan and New England specimen are by Mr. William Davenport, Harbor Branch Foundation Laboratory, Ft. Pierce, Florida.

Materials and Methods: Our system of measurements follows that of Manning (1969) except for total length (TL) which was measured along the dorsal midline from rostral tip to tip of the spines on the boss of the telson. All measurements were made with a Wild M-5 stereomicroscope using an ocular reticle and a stage micrometer, and were rounded off to the nearest tenth of a millimeter. Research vessel cruise numbers are followed by station number.

For complete synonymies the reader is referred to Manning's (1969) monograph on western Atlantic Stomatopoda. We include in this report only the citations of the original author, and subsequent changes and additions in the generic and subgeneric nomenclature.

Heterosquilla (Heterosquilloides) armata (Smith, 1881)

Figures 1-3

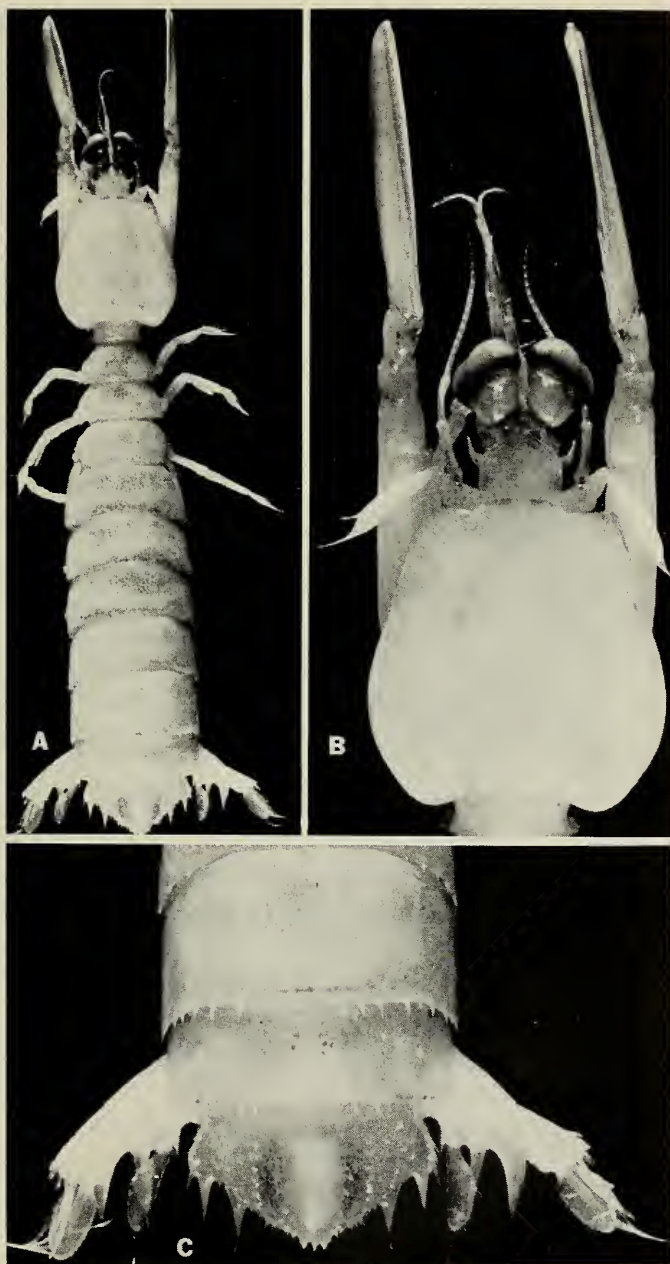
Lysiosquilla armata Smith, 1881: 446.—Manning, 1963: 321 [listed].
Heterosquilla (Heterosquilloides) armata.—Manning, 1963: 321 [listed]; 1966: 119, 124 [listed]; 1969: 44, 45, 52, fig. 11a, b; 1974: 1, 3, 4, fig. 7, 9 [listed, key].

Material examined: 1 ♀, cl 12.0 mm, TL 72.4 mm, R/V ALBATROSS IV, 63-7/166, 39°26'N, 72°25'W, 128 m, 36' otter trawl, 11 December 1963. 1 ♀, cl 7.4 mm, TL 42.8 mm, R/V GOSNOLD 237/507, 27°08.5'N, 79°54'W, 210 m, 5' Blake trawl, 11 June 1974.

Remarks: The New England specimen had been examined previously and its identification confirmed by Dr. R. B. Manning. The single Floridan specimen available for examination agreed well with the description and illustration provided by Manning (1969: 52) and with the male lectotype deposited in the National Museum of Natural History. In our specimen, the median projection of the telson was much more noticeably raised than would be inferred from R. P. Bigelow's illustration

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FIG. 1. *Heterosquilla armata* (Smith), Florida specimen, dorsal views: A, Whole animal. B, Carapace. C, Posterior abdominal somites and telson.



as used by Manning. In addition, the lectotype and other material in the National Museum exhibited a more distinct telsonal boss than the recently collected New England specimen. We also noted minor variation in the number and shape of the dorsal and marginal spines on the telson in the Floridan specimen (i.e. more sharply pointed) when compared with the above mentioned material but consider this variation to be nonsignificant (see Figs. 1c, 2c). We compared our specimen with all available material (much of which was in poor shape) deposited in the National Museum of Natural History (USNM 7199, 21491), and found no other notable differences.

Color: The color of the Floridan specimen after two months in alcohol was as follows. The animal is grayish-white overall with a fine network of brown chromatophores scattered over the body. The rostrum is brown anteriorly, becoming lighter at the suture with the carapace. The carapace has 2 brown spots anterolaterally, plus 4 spots on the gastric grooves, 2 of which occur on the posterior parts of the grooves, followed by 2 medially near the posterior margin of the carapace. The thoracic somites have brown chromatophores as follows: fifth somite, 2 small single "snowflake" dots on the anterolateral margin; somites 6-8, scattered brown specks posteriorly, becoming less numerous anteriorad, so that a clear margin appears to be present in unmagnified view. Abdominal somites 1-3 have alternating transverse bands of grayish-white anteriorly, and brown posteriorly, on each somite; somite 4 dorsolaterally with 2 subparallel transverse bands of brown, becoming off-white medially; somites 5 and 6 similar to somites 1-3. The telson has a row of scattered brown chromatophores laterally along the longitudinal margin of the raised median boss as far as the first row of transverse spinules. The carpus and merus of the raptorial claws, the antennules, the antennal peduncles, and the eyestalks all have numerous scattered brown chromatophores.

Measurements: New England female, TL 72.4, carapace length by width (cl \times cw) 12.0 \times 11.1, cornea width 3.6, rostral carapace length (Rcl) 16.2, rostral length by width (Rl \times Rw) 3.3 \times 3.6, width of abdominal somite 5 (A-5w) 14.5, telson length by width (tl \times tw) 7.7 \times 12.2 mm.—Florida female, TL 42.8, cl \times cw 7.4 \times 7.5, cornea width 2.4, Rcl 9.5, Rl \times Rw 2.1 \times 2.0, A-5w 7.9, tl \times tw 4.0 \times 6.8 mm.

Distribution: Off New England in waters 96-218 m depth. The Floridan specimen reported herein, collected in 210 m, extends the known range approximately 1400 km southward to a point about 19 km east of St. Lucie Inlet, Martin County, Florida.

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FIG. 2. *Heterosquilla armata* (Smith): A, New England specimen, whole animal, dorsal view. B, Same, posterior abdominal somites and telson, dorsal view. C, Florida specimen, posterior abdominal somite and telson, ventral view.

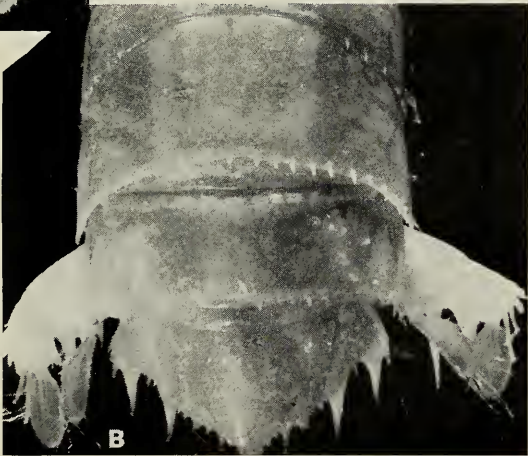
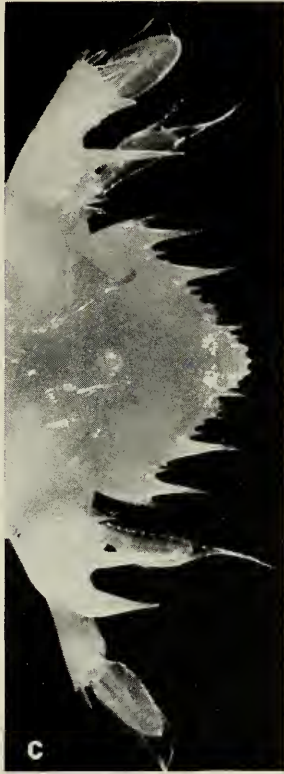




FIG. 3. *Heterosquilla armata* (Smith): A, Florida specimen, right raptorial claw, mesial view. B, New England specimen, anterior part, lateral view.

Discussion: Although extensive sampling has been carried out on the continental shelf of central eastern Florida between 27° and 28° N latitude over the past 10 months (November 1973 to August 1974) by the R/V GOSNOLD, with over 500 biological collection stations occupied, only the single female specimen of *H. armata* has thus far been taken. The Florida record, therefore, may be extralimital. Depth records, including the data on the NMFS specimen and the Floridan specimen, indicate that *Heterosquilla armata* is a species inhabiting deeper waters on the continental shelf. Station records for the U.S.F.C.S. FISH HAWK and ALBATROSS, those from the R/V ALBATROSS IV provided by Dr. Roland Wigley of the NMFS, and the R/V GOSNOLD data all indicate that *Heterosquilla armata* should be looked for on the distal edge of the continental shelf and upper margins of the continental slope. The tilefish record noted in Manning (1969: 52, 343) was a FISH HAWK station on the continental slope due east of New Jersey.

The presence of *H. armata* as far south as central eastern Florida may be either a reflection of its preferred habitat, i.e. the proximity of the continental slope, or a preference for the cooler oceanic water found along the 200 m line in this vicinity, where temperatures of 10–12°C prevail. Whatever the reason, the rediscovery so far southward of this distinctively ornamented lysiosquillid after an interval of over 90 years simply reinforces the fact that our knowledge of many benthic species and their distribution along the continental shelf still remains incomplete.

The New England specimen has been returned to Dr. Roland Wigley, National Marine Fisheries Service Laboratory, Woods Hole, Massachusetts. The specimen from Florida has been deposited in the National Museum of Natural History, Washington, D.C., USNM 150273.

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